

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	M08357A Sm. Tank	Client:	Alaskan Copper Works
Date Received:	02/17/12	Project:	% of Acid M08357, F&BI 202199
Date Extracted:	02/21/22	Lab ID:	202199-01 x10,000
Date Analyzed:	02/22/12	Data File:	202199-01 x10,000.035
Matrix:	Aqueous	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	93	60	125
Indium	90	60	125
Holmium	95	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	149,000
Nickel	129,000
Copper	<10,000
Zinc	<50,000
Arsenic	<10,000
Silver	<10,000
Cadmium	<10,000
Lead	<10,000
Iron Screen	<2,500,000

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: M08357B Lg. Tank
Date Received: 02/17/12
Date Extracted: 02/21/22
Date Analyzed: 02/22/12
Matrix: Aqueous
Units: ug/L (ppb)

Client: Alaskan Copper Works
Project: % of Acid M08357, F&BI 202199
Lab ID: 202199-02 x10,000
Data File: 202199-02 x10,000.036
Instrument: ICPMS1
Operator: AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	96	60	125
Indium	90	60	125
Holmium	92	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	775,000
Nickel	669,000
Copper	53,000
Zinc	<50,000
Arsenic	<10,000
Silver	<10,000
Cadmium	<10,000
Lead	<10,000
Iron Screen	4,110,000

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Alaskan Copper Works
Date Received:	Not Applicable	Project:	% of Acid M08357, F&BI 202199
Date Extracted:	02/21/22	Lab ID:	I2-115 mb
Date Analyzed:	02/22/12	Data File:	I2-115 mb.008
Matrix:	Aqueous	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	98	60	125
Indium	96	60	125
Holmium	99	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	<1
Nickel	<1
Copper	<1
Zinc	<5
Arsenic	<1
Silver	<1
Cadmium	<1
Lead	<1
Iron Screen	<250

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 02/24/12
Date Received: 02/17/12
Project: % of Acid M08357, F&BI 202199
Date Extracted: 2/21/12
Date Analyzed: 2/21/12

**RESULTS FROM THE ANALYSIS OF AQUEOUS SAMPLES
FOR SPECIFIC GRAVITY
@ 15.56 °C**

Sample ID
Laboratory ID

Specific Gravity

M08357A Sm. Tank
202199-01

1.09

M08357B Lg. Tank
202199-02

1.11

Note: The third significant digit is an estimate

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 02/24/12
Date Received: 02/17/12
Project: % of Acid M08357, F&BI 202199
Date Extracted: NA
Date Analyzed: 02/21/12

**RESULTS FROM THE ANALYSIS OF AQUEOUS SAMPLES
FOR PERCENT ACID**

<u>Sample ID</u> Laboratory ID	<u>Percent Acid</u>
M08357A Sm. Tank 202199-01	7.0
M08357B Lg. Tank 202199-02	7.4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 02/24/12

Date Received: 02/17/12

Project: % of Acid M08357, F&BI 202199

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF AQUEOUS SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 202197-04 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Chromium	ug/L (ppb)	20	1.06	80	81	67-132	1
Nickel	ug/L (ppb)	20	14.5	77 b	80 b	73-119	4 b
Copper	ug/L (ppb)	20	1.09	77	77	50-144	0
Zinc	ug/L (ppb)	50	<5	78	79	46-148	1
Arsenic	ug/L (ppb)	10	<1	104	104	56-167	0
Silver	ug/L (ppb)	5	<1	91	92	66-121	1
Cadmium	ug/L (ppb)	5	<1	101	102	86-118	1
Lead	ug/L (ppb)	10	<1	98	101	76-125	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Chromium	ug/L (ppb)	20	101	66-135
Nickel	ug/L (ppb)	20	103	67-134
Copper	ug/L (ppb)	20	103	66-134
Zinc	ug/L (ppb)	50	103	57-135
Arsenic	ug/L (ppb)	10	99	55-128
Silver	ug/L (ppb)	5	101	64-136
Cadmium	ug/L (ppb)	5	102	66-135
Lead	ug/L (ppb)	10	104	67-135

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 02/24/12

Date Received: 02/17/12

Project: % of Acid M08357, F&BI 202199

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF AQUEOUS SAMPLES
FOR SPECIFIC GRAVITY
@ 15.56 °C**

Laboratory Code: 202199-01 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Specific Gravity	1.09	1.09	0	0-2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 02/24/12

Date Received: 02/17/12

Project: % of Acid M08357, F&BI 202199

**QUALITY ASSURANCE RESULTS
FROM THE ANALYSIS OF AQUEOUS SAMPLES
FOR PERCENT ACID**

Laboratory Code: 202199-01 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Percent Acid	7.0	6.9	1	0-20

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 - More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Grand Report to Gerald Thompson

~~Company~~ Alaska Copper Works

Address 628 S. Harvard St.

City, State, ZIP SEATTLE WA 98134

Phone # 206-571-6035 Fax # 206-382-4309

SAMPLE CHAIN OF CUSTODY ME 02/17/12

AIU

SAMPLE # <u>108355</u> (signature) PROJECT NAME AND. <u>1/4 of Acid</u> PO # <u>M08357</u>	
REMARKS	

Page # _____ TO REMARKS AND TIME <input type="checkbox"/> Discontinued (S. Murphy) <input checked="" type="checkbox"/> REUSE <u>1/2 of</u> Break changes indicated by: _____ EXAMPLE INFORMATION <input type="checkbox"/> Diagrams after 30 days <input type="checkbox"/> Network completion <input type="checkbox"/> Will add with instructions
--

Sample ID	Lab ID	Date	Time	Sample Type	# of Containers	TFM-Ethanol	TFM-Gasoline	NPEL by OSHA	VOCs by OSHA	SVMCs by OSHA	HFE	% of Acid	Spec. Gravity	Ag	As	Cd	Cr	Cu	FE	Ni	Pb	Zn	Notes
M08357A	01	2/9/12	9:30	HNO3	1							X	X	X	X	X	X	X	X	X	X	X	
Sm. Tank																							
M08357B	02	2/9/12	9:33	HNO3	1							X	X	X	X	X	X	X	X	X	X	X	
Lg. Tank																							

Prepared by: [Signature]
Date: 2/9/12
Time: 10:55 AM
Location: WIA 80119-0000
Phone: (206) 262-4000

Printed Name: [Signature]
Company: Greaves Thompson
Address: Khan Placid
City: Fe BI
State: 2/17/12
Initials: V

Samples received at 17 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

February 24, 2012

Gerald Thompson, Project Manager
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

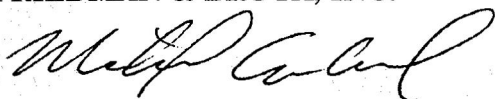
Dear Mr. Thompson:

Included are the results from the testing of material submitted on February 17, 2012 from the % of Acid M08357, F&BI 202199 project. There are 9 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
ACU0224R.DOC